Amendments to the Claims

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently amended)

A sensor for monitoring an environmental parameter in concrete comprising:

(a) an enclosure for embedding in concrete;

(b) a detecting means connected to the enclosure for detecting at least one environmental parameter in concrete, the detecting means comprising at least one capacitive element for measuring capacitive change;

(c) an active material connected to the enclosure,

(i) the active material being liable to respond to the environmental parameter, and

(ii) the active material being operably connected to the capacitive element;

(d) a RFID chip mounted within the enclosure, the RFID chip being operably connected to the detecting means; ~~and~~

(e) an antenna operably connected to the RFID chip,

(i) the antenna being operably connected to the detecting means, and

(ii) the antenna being part of an ~~L-R-C~~ L-C circuit whose resonance frequency shifts within an assigned frequency band, and

(f) a transceiver electromagnetically coupled with the antenna,

wherein the transceiver is operably connected to a means for measuring the change in resonance frequency of the sensor's L-C circuit.

2. (Cancelled)

The sensor of claim 1 further comprising:

(f) a transceiver electromagnetically coupled with the antenna.

3. (Currently amended)

The sensor of claim [[2]] 1 further comprising:

(g) an information processor in communication with the transceiver, the information processor being adapted to identify the environmental parameter from data generated by the transceiver.

4. (Original)

The sensor of claim 1 wherein the shift in resonance frequency is a shift in frequency of a re-radiated signal.

5. (Cancelled)

The sensor of claim 2 wherein the transceiver is operably connected to a means for measuring the change in resonance frequency of the sensor's L-R-C circuit.

6. (Original)

The sensor of claim 3 wherein the environmental parameter is identified by measuring a shift in frequency of complex impedance (Z) within the assigned frequency band.

7. (Currently amended)

The sensor of claim 1 [[or 2]] wherein the capacitive change is effected by movement of the capacitive element.

8. (Currently amended)

The sensor of claim 1 [[or 2]] wherein the capacitive change is effected by change in permittivity of the active material.

9. (Currently amended)

The sensor of claim 1 [[or 2]] wherein the capacitive element comprises a parallel plate capacitor.

10. (Currently amended)

The sensor of claim 1 [[or 2]] wherein the parallel plate capacitor is a perforated parallel plate capacitor.

11. (Currently amended)

The sensor of claim 1 [[or 2]] wherein the capacitive element comprises an interdigitated capacitor.

12. (Currently amended)

The sensor of claim 1 [[or 2]] wherein at least a portion of the enclosure is permeable.

13. (Currently amended)

The sensor of claim 1 [[or 2]] wherein the environmental parameter is moisture content.

14. (Currently amended)

The sensor of claim 1 [[or 2]] wherein the environmental parameter is temperature.

15. (Currently amended)

The sensor of claim 1 [[or 2]] wherein the environmental parameter is pH.

16. (Currently amended)

The sensor of claim 1 [[or 2]] wherein the environmental parameter is ion concentration.

17. (Currently amended)

The sensor of claim [[1 or 2]] 16 wherein the ion is chloride.

18. (Currently amended)

The sensor of claim [[1 or 2]] 16 wherein the ion is sodium.

19. (Currently amended)

The sensor of claim [[1 or 2]] 16 wherein the ion is potassium.

20. (Currently amended)

The sensor of claim 1 [[or 2]] wherein the active material is a dielectric material.

21. (Currently amended)

The sensor of claim 1 [[or 2]] wherein the active material is a hydrogel.

22. (Currently amended)

The sensor of claim 1 [[or 2]] wherein the assigned frequency band is 13.56 MHz and the re-radiated signal is within a frequency band 27.125 MHz.

23. (Withdrawn)

A method for applying an active material within a MEMS device comprising pouring at least one precursor material of the active material into an opening of the MEMS device.